good condition. The soil was largely free of frost, and plowing and other farm work was possible for considerable periods.

In the southern trucking regions east of the Mississippi winter crops made good progress on account of the general warmth, and much outdoor work was accomplished.

In Florida citrus and other fruit trees were beginning to bloom, and farther north the buds were being rapidly forced by the continued warm weather.

West of the Mississippi the precipitation was generally heavier than usual, snow and ice covered the ground during much of the month, and there was some apprehension that injury might result to wheat and other winter grains therefrom. Severe cold near the middle of the month extended to the Texas coast, killing much tender vegetation in the trucking regions of that State. In the more northern portions, and generally in the mountains, the snow was heavy and much feeding of stock was necessary.

Some losses and much suffering resulted from the severe cold and long-continued snow covering. In the far Northwest the snow covering greatly benefited the winter wheat, but it necessitated much feeding of stock and greatly interfered with outdoor occupations.

Average accumulated departures for January, 1916.

Districts.	Temperature.			Precipitation.			Cloudiness.		Relative humidity.	
	General mean for the current month.	Departure for the current month.	Accumulated departure since Jan. 1.	General mean for the current month.	Departure for the current month.	Accumulated departure since Jan. 1.	General mean for the current month.	Departure from the normal.	General mean for the current month.	Departure from the normal.
	°F.	°F.		Ins.	Ins.		0–10.		Perct.	Perct.
New England	29.2	+ 4.8		1.48	−2.00		6.3	+0.4	75	− 1
Middle Atlantic	38.0	+ 6.4		1.70	−1.50		6.5	+0.7	72	− 4
South Atlantic	52.8	+ 7.6		1.62	−2.30		5.9	+0.6	81	+ 4
Florida Peninsula	70.9	+ 6.4		1.03	−1.70		4.0	+0.8	79	− 2
East Gulf	54.8	+ 7.5		3.67	−1.30		6.5	+0.8	81	+ 3
West Gulf	51.0	+ 4.9		4.81	+1.80		7.3	+2.5	82	+ 6
Ohio Valley and Tennessee	39.9	+ 6.7		6.11	+2.30		7.1	+0.7	78	+ 1
Lower Lakes	31.4	+ 7.1		2.96	+0.30		7.6	+0.2	78	− 3
Upper Lakes	21.6	+ 3.3		3.27	+1.20		7.7	+0.8	82	− 1
North Dakota	−5.9	−10.0		1.04	+0.40		5.7	+0.8	87	+ 7
Upper Mississippi Valley	24.4	+ 2.8		4.45	+2.80		6.6	+1.2	81	+ 3
Missouri Valley	18.0	− 3.1		3.34	−2.40		5.9	+0.9	82	+ 7
Northern slope	5.7	−13.3		1.34	+0.50		5.6	+0.5	76	+ 6
Middle slope	26.0	− 3.1		1.48	+0.80		6.0	+1.9	76	+ 9
Southern slope	44.5	+ 3.0		0.45	−0.20		6.0	+1.6	64	− 2
Southern Plateau	39.4	− 1.3		3.05	+2.30		4.8	+1.4	62	+12
Middle Plateau	24.2	− 4.2		2.93	+1.90		7.0	+1.9	80	+10
Northern Plateau	19.9	− 8.9		1.92	+0.30		7.7	+1.0	78	− 2
North Pacific	31.9	− 7.5		5.74	−1.00		7.7	+0.2	79	− 6
Middle Pacific	43.2	− 4.1		10.92	+6.20		7.8	+2.6	86	+ 5
South Pacific	49.0	− 1.8		11.06	+8.30		6.8	+2.3	82	+10

WEATHER CONDITIONS ON THE NORTH ATLANTIC DURING JANUARY, 1915.

The data presented are for January, 1915, and comparison and study of the same should be in connection with those appearing in the Review for that month. Chart IX (XLIV–9) shows for January, 1915, the averages of pressure, temperature, and the prevailing direction of the wind at Greenwich mean noon, together with the locations and courses of the more severe storms of the month.

For the month as a whole the distribution of the atmospheric pressure over the greater part of the ocean was not far from the normal. On the Meteorological Chart of the North Atlantic for January, showing the normal conditions for that month, a high area surrounded by an isobar of 30.2 inches is central near latitude 28°, longitude 40°, while there is a second high off the coast of Portugal and North Africa, extending as far West as the Madeira Islands. For January, 1915, a high of normal intensity was central near latitude 35°, longitude 26°, while a secondary high with a crest of 30.1 inches extended from the fifty-eighth to ninety-fifth meridians and the thirtieth to forty-seventh parallels. The Icelandic low was of nearly normal intensity and near its usual position, being approximately central at latitude 62°, longitude 7°W.

There was a marked decrease in the number of gales since December, and on the northern trans-Atlantic steamer routes most of them occurred in the first decade of the month. Over the ocean as a whole the number of gales was below the normal for the month of January, although there were some exceptions, as in the 5 degree square between the thirtieth and thirty-fifth parallels and the fiftieth and fifty-fifth meridians, gales were reported on 6 days, a percentage of 19, while the normal for the month is 10.

On Chart III (XLIII–3), showing tracks of low areas for January, 1915, a low (I on Chart IX) is shown that first appeared on the morning of December 31 in northern Saskatchewan. This moved in an approximately southeasterly direction, crossing the Great Lakes, and on the evening of January 2 was central on the Atlantic Coast about 50 miles south of Portland. On the morning of the 3d, the center had moved to latitude 45°, longitude 54°, the barometer having fallen to 28.52 inches, and the wind increased to a velocity of from 65 to 75 miles an hour. The storm log from the steamship *Minnehaha* (Brit.) shows that the lowest barometer reading recorded by that vessel during the storm was 28.46 inches, at 6 a. m. (local time) January 3, the highest velocity of the wind being 90 miles an hour. This disturbance now curved slightly toward the north, the rate of translation being rapid, and on the 4th the center was near latitude 52°, longitude 38°, the barometer having fallen slightly, and the velocity of the wind remaining practically unchanged, as several vessels in the southern quadrant of the area reported westerly winds of from 65 to 75 miles an hour, with snow and hail. The storm then moved toward the north, decreasing in its rate of movement, the pressure and force of wind remaining about the same. It then recurved to the east, and on the 6th was near latitude 55°, longitude 29°, the barometer having risen slightly, the wind retaining its high velocity. On January 7 the center was near Stornoway, Scotland, where the barometer reading was 29.16 inches. There were no reports received from vessels in the immediate vicinity of Stornoway, although near latitude 50°, longitude 20°, winds of gale force were encountered. This storm track was remarkable for the prevalence of unusually heavy winds over a long period, as from January 3 to 6, inclusive, heavy gales of from 75 to 90 miles an hour were reported continuously along the path of the low.

On Chart III (XLIII–3), a second low (II on Chart IX) is shown near Brownsville, Tex., on the morning of January 10. This moved along the coast, accompanied by moderate winds, and on the 12th was central off Hatteras, one vessel near latitude 31°, longitude 65°, reporting a southerly gale of 64 miles. The center moved only a short distance during the next 24 hours, as on the morning of the 13th it was near latitude 37°, longitude 71°, the barometer having fallen to 29 inches; heavy north, northwesterly, and westerly gales prevailing along the coast between Boston and Charleston. From this

point the rate of movement was greatly accelerated, and moving nearly due east, it was near latitude 40°, longitude 53°, on the morning of the 14th. The winds near the center of the area were moderate and fog was reported by two vessels, while in the southwest quadrant gales prevailed over a large area. The disturbance then traveled a short distance toward the southeast, and on the 15th was near latitude 39°, longitude 49°, the winds decreasing in violence and fog being encountered north of the center.

It then curved sharply to the north, being located on the 16th near latitude 46°, longitude 48°, the wind decreasing in force and the fog covering a larger area than on the two previous days. The low then turned suddenly to the south, the center on the following day being near latitude 33°, longitude 45°. The fog had disappeared and while the winds near the center remained moderate, vessels to the west of it between the fiftieth and sixtieth meridians encountered northwest gales of from 64 to 75 miles an hour. The southerly movement from the 17th to 19th was slow, and while on the 18th heavy gales were reported between the twenty-eighth and thirty-seventh parallels and the forty-fifth and fifty-third meridians, on the 19th they had decreased in force, the low beginning to fill in, as no trace of the disturbance could be seen on the 20th. This track was remarkable for its erratic course between the 14th and 19th, and also for the fact that it was accompanied by exceptionally heavy winds for the latitude.

A low (III on Chart IX) is shown that first appeared on January 10 near latitude 39°, longitude 58°. Winds of from 56 to 64 miles an hour, with hail and snow, were reported by vessels about 5 degrees southwest of the center, although the storm area was comparatively small. This disturbance moved in a northeasterly direction and on the 11th was central near latitude 45°, longitude 50°. The barometer reading was less than on the previous day, although the wind had decreased in force, and one vessel encountered fog near the center. Moving with a uniform rate of speed toward the northeast, this low was central near latitude 48°, longitude 40°, on the morning of the 12th. In the southwest quadrant of the area winds of from 48 to 56 miles were recorded, and one vessel 15 degrees south of the center encountered a northwest gale of 56 miles an hour, while other vessels in the same vicinity experienced gales of from 40 to 48 miles an hour. The movement of this disturbance between the 12th and 13th was slow, and on the latter date it was near latitude 51°, longitude 34°, the wind having decreased, while fog was prevalent over a small area. The storm now increased in its rate of movement, and on the 14th was near latitude 57°, longitude 22°, southwest winds of 56 miles an hour being reported by two vessels near its center. Continuing in a northeasterly direction, the center of this low reached a point somewhere between Iceland and the Scandinavian coast on the 15th, although as there were no vessels in the locality, it was impossible to plot its exact position.

TEMPERATURE.

The temperature of the air over the ocean as a whole was above the average, positive departures of 10 degrees occurring between the thirty-fifth and fortieth parallels and the fiftieth and sixty-fifth meridians. In the waters adjacent to the coast of Scotland the temperatures were slightly below the normal, while between the twenty-fifth and fifty-fifth parallels, east of the fifteenth meridian, the departures ranged from 0 to + 4 degrees. Off the American coast, north of the thirtieth parallel, the departures ranged from +2 to +5 degrees, while at a number of Canadian and U. S. Weather Bureau stations on the Atlantic coast they were as follows:

St. Johns, Newfoundland, +2.1°; Sydney, C. B. I., +5.6°; Halifax, N. S., +3°; Eastport, +4.5°; Portland, +4.4°; Boston, +6.0°; Nantucket, +5.5°; New York, +3.9°; Washington, +2.7°; Norfolk, +1.8°; Hatteras, +2.3°; Charleston, +0.4°; Titusville, −1.8°; Miami, −0.3°; Key West, +0.7°.

FOG.

Fog was somewhat less frequent than usual over the ocean as a whole. For the 6-year period from 1901 to 1906, the maximum amount of fog occurred off the banks of Newfoundland, where for the month of January the percentage was from 30 to 35. For the month under discussion fog was observed in that locality on 7 days, a percentage of 23. For that part of the trans-Atlantic route east of the thirtieth meridian the normal percentage is from 10 to 15, while for January, 1915, it was from 3 to 7.

PRECIPITATION.

Hail occurred on 20 days during the month and snow on 19, and both hail and snow on 17. On January 21 hail was reported near latitude 27, longitude 37, which was unusual, as it is not often seen in that locality.

Maximum wind velocities, January, 1916.

Stations.	Date.	Velocity.	Direction.	Stations.	Date.	Velocity.	Direction.
		Mi./hr.				*Mi./hr.*	
Alpena, Mich	22	52	w.	New York, N. Y.	14	60	nw.
Block Island, R. I.	3	68	nw.	Do	17	55	nw.
Do	17	56	nw.	Do	22	51	sw.
Buffalo, N. Y.	2	60	w.	Do	23	62	nw.
Do	3	56	w.	Do	28	62	nw.
Do	4	50	sw.	North Head, Wash	20	54	sw.
Do	5	60	nw.	Do	21	62	s.
Do	6	56	nw.	Do	22	94	s.
Do	10	50	w.	Do	23	60	s.
Do	13	76	w.	Pittsburgh, Pa.	13	52	n.
Do	17	56	w.	Point Reyes Light, Cal.	1	54	s.
Do	18	52	sw.	Do	2	84	s.
Do	22	60	w.	Do	8	60	s.
Do	27	60	w.	Do	9	62	nw.
Do	31	54	sw.	Do	10	68	nw.
Cheyenne, Wyo.	4	52	w.	Do	22	69	s.
Do	21	70	w.	Do	23	73	s.
Cleveland, Ohio	10	53	s.	Do	25	50	nw.
Corpus Christi, Tex.	20	50	se.	Do	27	104	nw.
Detroit, Mich.	13	50	w.	Do	28	70	nw.
Duluth, Minn.	12	62	nw.	Providence, R. I.	28	60	nw.
El Paso, Tex.	11	58	sw.	Pueblo, Colo.	9	56	w.
Erie, Pa.	10	52	se.	Sacramento, Cal.	2	50	se.
Do	12	54	se.	Sandusky, Ohio	3	51	nw.
Do	13	50	se.	Do	5	53	sw.
Do	27	50	sw.	Do	22	51	sw.
Evansville, Ind.	12	50	s.	San Diego, Cal.	27	54	s.
Flagstaff, Ariz.	28	54	sw.	Sault Ste. Marie, Mich.	22	55	w.
Fresno, Cal.	27	52	sw.	Sioux City, Iowa	27	50	nw.
Grand Haven, Mich.	5	52	w.	Tatoosh Island, Wash.	2	59	e.
Grand Junction, Colo.	28	51	sw.	Do	3	61	e.
Lexington, Ky.	5	52	sw.	Do	10	50	e.
Louisville, Ky.	12	52	s.	Do	11	60	e.
Marquette, Mich.	22	55	w.	Do	12	53	e.
Mount Tamalpais, Cal.	2	63	sw.	Do	14	60	ne.
Do	9	60	sw.	Do	15	75	ne.
Do	10	50	nw.	Do	16	74	ne.
Do	13	50	sw.	Do	17	66	e.
Do	14	58	sw.	Do	20	56	sw.
Do	20	51	nw.	Do	22	56	s.
Do	23	58	s.	Do	23	50	w.
Do	27	50	se.	Do	24	58	e.
Nashville, Tenn.	12	57	se.	Do	27	50	ne.
New York, N. Y.	3	67	nw.	Do	31	55	e.
Do	4	60	nw.	Toledo, Ohio	13	54	sw.
Do	5	52	sw.	Do	27	50	s.